FACULTY OF PUBLIC HEALTH

Data for Everyone's Health

Optimising public health intelligence: challenges, opportunities and ways forward

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Executive summary

The ever-increasing importance of digital technologies is one of the central themes of the 21st century. Advances in areas such as diagnostic imaging, remote surgery and wearable biometric devices have benefitted patients. Application of large-scale data and analysis to promote the health of the whole population could have huge benefits for society but has lagged behind clinical developments. In this paper we define public health intelligence, outline barriers to realising its potential, and make eight recommendations to government and the health and care sector.

Public health intelligence is the application of data and analytical methods for the purpose of preventing disease, prolonging life and promoting health through the organised efforts of society. It is an essential part of all the public health functions which are spread across central and local government and the NHS. While public health intelligence overlaps with epidemiology, social research, statistics, data science and informatics, it also involves core public health knowledge and a broad set of communication and management skills.

Staff in public health intelligence roles are not currently a coherent or well-recognised group, which limits professional development and career opportunities. They are scattered across many different organisations in and out of the health sector and have widely varying job descriptions and titles. In this paper we distinguish three categories of public health intelligence roles – highly expert public health intelligence specialists who are part of the core public health workforce, a broader group of public health intelligence practitioners, and the many public health specialists with an intelligence component within their overall responsibilities.

We recommend (1) an inventory to better understand the current workforce, (2) promoting the role of public health intelligence specialists through professional membership and registration, and (3) mapping functions and skills to guide more coherent training and development.

There is a need for strategic analytical leadership at all levels of the health and care sector, focussing on the 'big picture' of improving the public's health and understanding the transformative potential of data and analytics to achieve better health as well as healthcare. The stalling of health improvement and increasing inequality in the last decade, complexities of multiple chronic illnesses in an ageing population, and urgent challenges from child poverty to climate change, all call for visionary and inclusive health leadership and more sophisticated use of data to make informed decisions about policies and services.

We recommend (4) a senior leader in the Department of Health and Social Care (DHSC) to lead and represent public health intelligence nationally, (5) all public health specialists to gain intelligence and analytical leadership competencies, and (6) development of a shared vision of analytical health leadership across the whole public sector.

Transformative public health intelligence needs to bring together data about all the drivers of health in the population, whether geospatial, environmental, commercial, about housing, transport or education, as well as about health and social care. A major barrier to the more effective use of data is the range of disparate and inefficient mechanisms for sharing and linking data across the public sector.

We recommend (7) urgent clarification of the legal and ethical framework for sharing data for public health, and (8) development of practical and efficient infrastructure for data linkage and advanced analysis that meets the needs of local public health services.

Summary of recommendations

Recommendation 1

DHSC, Ministry of Housing, Communities and Local Government (MHCLG) and their devolved equivalents, working with the FPH, Local Government Association (LGA) and key stakeholders across the UK public health landscape, should carry out an inventory of public health intelligence roles and skill sets at national, regional and local levels, not limited to health sector staff.

Recommendation 2

The FPH and the United Kingdom Public Health Register (UKPHR) should promote the identity of public health intelligence specialists as part of the core public health workforce and consider how appropriate categories of membership and professional registration can be offered to public health intelligence professionals, in consultation with public health intelligence staff of different disciplines and backgrounds.

Recommendation 3

DHSC, MHCLG and their devolved equivalents, working with the FPH, UKPHR, LGA and other stakeholders across the public health landscape, should map the functions and skills of different roles within the scope of public health intelligence, using the specification of the Health and Care Intelligence Specialist Apprenticeship as a starting point.

Recommendation 4

DHSC should lead the process to appoint a senior leader, supported by adequate resources, to lead and represent the public health intelligence function both within the Department and across the health and social care sector and local government.

Recommendation 5

The FPH and UKPHR should ensure, through the public health training curriculum, continuing professional development (CPD) and accreditation processes, that all public health specialists have up-to-date knowledge of public health intelligence and the skills to provide effective formalised analytical leadership across national, regional and local health and social care systems, including Integrated Care Systems (ICSs) in England.

Recommendation 6

The FPH should work with DHSC, Association of Directors of Public Health (ADPH), Association of Professional Healthcare Analysts (AphA), Local Area Research and Intelligence Association (LARIA) and other organisations to promote a vision of analytical leadership which encompasses the whole of local government, NHS and allied services; aligns with the aims and values of public health; and recognises systems complexity.

Recommendation 7

The relevant government departments including DHSC, MHCLG and Office for National Statistics (ONS) should urgently clarify the legal pathways and ethical framework for cross-sectoral data sharing and linkage, including ensuring the availability of health and social care microdata for public health, population health improvement and research purposes, by legislation if necessary.

Recommendation 8

The relevant government departments, in consultation with experts on data sharing, privacy protection and data linkage methodologies, should urgently develop practical proposals to support cross-sectoral data linkage and effective use of cross-sectoral data through an appropriate technical architecture.

1. Introduction

This policy paper was produced by the Public Health Information and Intelligence Special Interest Group and the Health Services Committee of the Faculty of Public Health. References to organisations and legislation reflect the English and to some extent the Welsh context, but the overall themes have wider relevance in the UK and elsewhere.

Public health addresses the whole range of influences on health in our society, from genetics to junk food advertising and water quality to work-related hazards. **Public health intelligence** includes the study of health, its wider determinants and unwarranted variation to reveal the health risks affecting populations and evidence-based ways (aligned with ethical reasoning) to counter those risks and so guide effective and equitable local planning and provision of services by local government and the NHS.

A revitalised public health intelligence service, using the most up-to-date analytical methods and a wide range of data, has the potential to transform prevention, improving everyone's health and reducing the burden of illness. Achieving this vision requires fostering a skilled and motivated public health intelligence workforce, clearing away historical barriers to the use of essential data sources, and promoting effective system-wide analytical leadership.

2. Understanding the context

The growth of information and communication technologies (ICTs) since the late 20th century has made major contributions to healthcare. Areas of medicine have been transformed, for example, by the digitisation of diagnostic imaging and development of new scanning technologies. Portable electronic devices have changed medical practice and patient experience in fields like heart disease and diabetes. Remote consultations and robotic surgery have created new possibilities for efficient delivery of treatment. More recently, new applications of Artificial Intelligence (AI) and the data-collecting possibilities of the 'internet of things' are examples of the ever-increasing role and potential of data and ICTs in health-related applications.

Despite the increasing role of data-intensive technologies in individual-level healthcare, there has not been a similar impact on the health of the population. There are two related reasons for this mismatch. First, because (as is well understood) the health of the population is mostly affected by wider social, economic and environmental determinants, and not just by the availability or quality of care[1]; and second, because investment in ICTs and better use of data has focussed mainly on the detection of illness and treatment of individual patients, rather than the prevention of illness or the promotion of good health for large groups or entire populations.

> *Despite the increasing role of data-intensive technologies in healthcare, there has not been a similar impact on the health of the population*

Governments of all political leanings have at least paid 'lip service' to the importance of preventing illness and the need for better use of data to achieve that aim. However, the greatest opportunities to improve health and prevent disease have so far been missed. Partly this is due to political and ideological reasons, because tackling the wider threats to the public's health requires recognizing that socioeconomic and environmental issues facing the community are as or more important than individual behaviour or genetic risks. For example, the 2018 White Paper Prevention is better than cure said (optimistically):

Predictive prevention will transform public health by harnessing digital technology and personal data … we can use digital tools to better identify risks and then help the behaviours of people most in need - before they become patients.[2]

This concept, that data can be used to identify individuals at risk of illness and help them with lifestyle advice or preventive healthcare, leads to the current approach of 'population health management' which has clear benefits. But it still falls well short of the potential for healthier communities offered by the collection and analysis of data based on wider perspectives of public health.

The other major reasons for the slow application of promising new data-driven approaches to improving the health of whole communities – the public health approach – are more practical in nature, though still often underpinned by political and organisational motivations. These practical challenges, and the solutions to overcome them, are the focus of this paper.

3. Defining public health intelligence

The FPH defines public health as "the science and art of preventing disease, prolonging life, and promoting health through the organised efforts of society"[3]. Similarly, we can define public health intelligence as the application of data and analytical methods for the purpose of preventing disease, prolonging life and promoting health through the organised efforts of society.

Tasks within the scope of public health intelligence include designing and carrying out data collections, accessing and linking data sources, analysing data using a wide range of techniques and communicating the results, advising others on the use of data and analyses, plus all the associated planning, management, ethics, law and governance activities. Advanced data-driven technologies including AI are increasingly used.

Public health intelligence is the application of data and analytical methods for the purpose of preventing disease, prolonging life and promoting health through the organised efforts of society

Public health intelligence should take an inclusive approach and is not limited to quantitative forms of analysis. It is both a specific skill-set and a cross-cutting component of all the internationally recognised essential public health functions[4]. Public health intelligence overlaps in its subject matter and range of methods with epidemiology, social research, statistics, data science and informatics.

A useful way of looking at the challenge of developing public health intelligence to its full potential is provided by the well=known 'Gartner Analytics hierarchy' which describes four stages of the use of analytical methods[5]:

1. **Descriptive analytics: What happened?** Understanding the current health of the population, and past trends and historical impacts.
2. **Diagnostic analytics: Why did it happen?** Identifying the determinants of health and how they have affected the local population.
3. **Predictive analytics: What will happen?** Modelling likely future health trends and need for health and social interventions; supporting forward planning.
4. **Prescriptive analytics: How can we make it happen?** Using advanced methods to apply historical learning and prediction at a system level to evaluate complex outcomes, identify solutions to current and emerging health issues.

Routine reporting dashboards and annual public health reports are often confined to the first two of these levels, but the greatest value can be gained from the last two[678]. This application of public health intelligence, if it is made possible on a large scale, has transformative potential to improve health in society through well-directed prevention and health-promoting interventions.

Public health intelligence requires a wide variety of data sources and technical methods to achieve its full potential (see *Figure 1: Types and uses of data for public health*). As discussed later, the availability of health and social care data at microdata (individual record) level and the technical difficulties of data linkage are currently substantial barriers. Representative data sources such as health surveys are also a valuable source of public health intelligence and bring unique perspectives different from data based on service activity[9].

Figure 1: Types and uses of data for public health
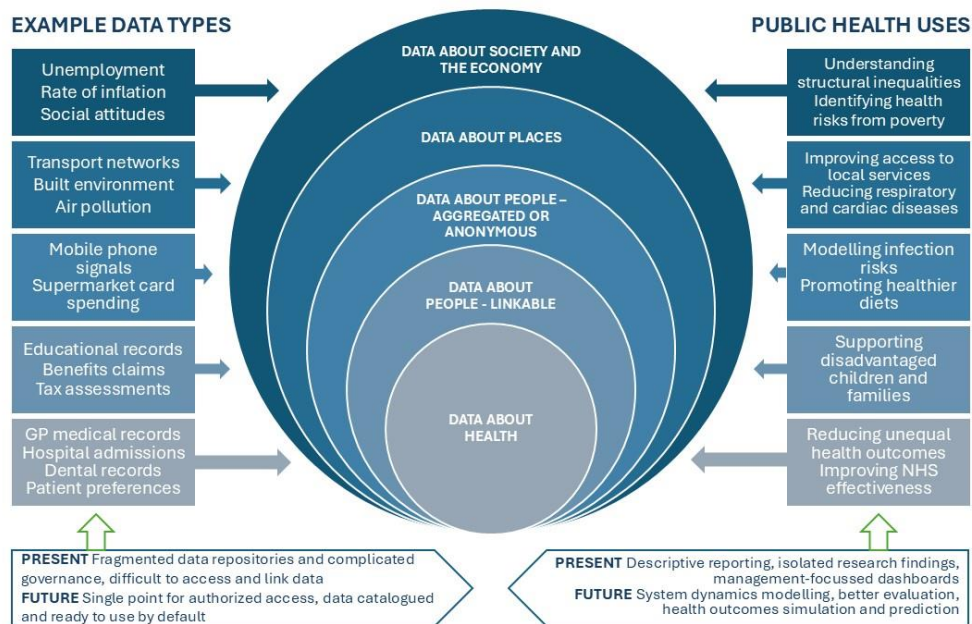
A significant problem for the health and care sector is that there is currently no single clearly defined, qualified and adequately resourced group of professional public health analysts who can apply the necessary state-of-the-art skills and methods nationally and across local communities. Although many talented individuals work in local authority, NHS and government roles, coverage is inconsistent and means of communication and knowledge-sharing across organisations are limited. This has a negative effect on recruitment and retention of skilled analysts, development of specialist expertise, and the application of best practice and standards across organisations,

One major reason for this is shortage of financial resources: the period since the Health and Social Care Act 2012[10] returned responsibility for the health of the population to local government has seen a real-terms cut in English local authority budgets by an average of 26%[11]. In Wales, local public health sits within the Health Board structure where organisations are primarily focussed on the urgent pressures of secondary care. There has also been a lack of vision, locally and nationally, about the role of data for public health and the need for a skilled cohort of analysts specialising in the necessary techniques.

At central government level, the situation is further complicated by the split of responsibilities in England between the Department of Health and Social Care (DHSC), the Ministry for Housing, Communities and Local Government (MHCLG) and various arms-length bodies.

4. The public health intelligence workforce

Considering the central role played by data and analysis in promoting and protecting people's health – ever since the Victorian (and earlier) pioneers of public and environmental health – it seems surprising that the role of the public health analyst is not better recognised. There have been several reports and strategies touching on this since the late 20th century (see Annex 1). The workforce strategy that followed the 2010 White Paper Healthy Lives, Healthy People[12] said that:

> *The public health knowledge and intelligence function … concerns the management of knowledge needed to inform action, including: analysis of data and statistics; learning from practical experience and sharing best practice; and implementing new knowledge gleaned through research.[13]*

Attempts to quantify the public health intelligence workforce have had limited success. The Centre for Workforce Intelligence (CfWI) estimated in 2015 that there were between 1,070 and 1,370 people working in public health intelligence taking into account local authorities and the then Public Health England[14]. The situation a decade later, following numerous organisational changes at both national and local levels, is unknown. Public health analysts may be situated within a range of local and national organisations, now including Integrated Care Systems in England, and have a variety of different job titles. Public health analysis in Wales is partly centralised within Public Health Wales and spread unevenly across the seven Health Boards.

The lack of a clear professional definition for public health intelligence is accompanied by a shortage of coherent and broadly applicable qualifications and standards, well-defined career pathways and strong professional networks. The career routes into local analytical roles are varied Analytical staffing levels and skills vary greatly between local authorities, while opportunities for learning between different organisations and sectors are haphazard. At the same time, the Local Knowledge and Intelligence Service operating on a regional basis from within DHSC provides valuable support and guidance to practitioners.

Various academic and professional qualifications are relevant to public health intelligence. Perhaps the most important recent initiative is the Health and Care Intelligence Specialist Apprenticeship, developed by a broad coalition of employers led by the then Public Health England[15]. The specification for this qualification sets out the roles and skills for health-related analytical functions in detail, allowing the requirements for public health intelligence to be identified systematically. The training approach was intended, in line with the recommendations of the CfWI, to foster the mobility of analysts across the health and social care sector.

Our working definitions

To help clarify long-standing discussions about the definition of the public health intelligence workforce, we propose the following distinctions (see

Figure 2: Public health intelligence roles and expertise):

(a) Public health intelligence specialists

Public health intelligence (PHI) specialists are experienced professionals whose focus is the practice, development or management of PHI activities and methods. Their core skill-set may align with, but is not limited to, an analytical discipline such as statistics, epidemiology or social research. Some may be registered with the UKPHR. As advanced specialists with a wide skill-set and knowledge of both analytical and public health subjects, they form part of the core public health workforce. They may work in any organisation across central and local government, health and social care sectors, or sometimes in academia.
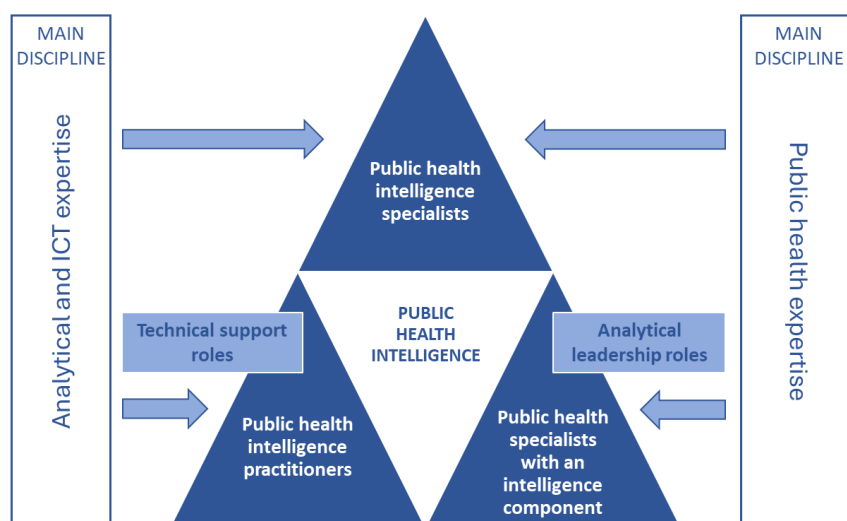
(b) Public health intelligence practitioners

Public health intelligence practitioners are professional analysts who carry out PHI as part of their roles, not necessarily as their main focus. They may be less experienced than colleagues at specialist level, have responsibilities across several subjects of which public health is only one, or be in more technical roles such as database administrators. Job titles and organisational arrangements may not relate directly to public health. These practitioners can be seen as part of the wider public health workforce but may identify mainly with an analytical or ICT profession.

(c) Public health specialists with an intelligence component

Most public health specialist roles, for example Public Health Consultants and Directors of Public Health, require a strong understanding of analytical methods and their potential, and the ability to communicate analytical findings. The need for all public health specialists to have relevant skills is referenced in the FPH Workforce Strategy[16]. Individuals have differing degrees of expertise in PHI but analytical tasks may not be central to their role. Some senior roles may include responsibility for a PHI team and all are likely to be 'informed users' of analytical products, so it is important for public health specialists to have the knowledge and skills to lead multidisciplinary teams that provide or make use of PHI.

Figure 2: Public health intelligence roles and expertise

To strengthen the consistent development of knowledge and good practice across the public health intelligence workforce, foster the development of specialist expertise and professional identity in public health intelligence, and ensure that all public health specialists have the skills they need for 21st century public health practice, we recommend the following actions:

Recommendation 1

DHSC, MHCLG and their devolved equivalents, working with the FPH, LGA and key stakeholders across the UK public health landscape, should carry out an inventory of public health intelligence roles and skill-sets (including vacant posts) at national, regional and local levels, not limited to health sector staff. Professional associations and regional bodies should be involved. This will provide an understanding of the public health intelligence workforce which has been lacking for many years and a baseline from which all the organisations involved can plan for effective recruitment, training and career pathways. Changing organisational responsibilities and resources will have to be taken into account.

The FPH and UKPHR should promote the identity of public health intelligence specialists as part of the core public health workforce and consider how appropriate categories of membership and professional registration can be offered to public health intelligence professionals, in consultation with public health intelligence staff of different disciplines and backgrounds and at all levels. This will strengthen professional networks and identity, contribute to retention of experienced staff, and foster exchange of knowledge between analytical professionals and those trained in general public health. As part of this effort, the Faculty should strengthen its relationships with other professional associations that are relevant to the analytical professions.

DHSC, MHCLG and their devolved equivalents, working with the FPH, UKPHR, LGA and other stakeholders across the public health landscape, should map the functions and skills of different roles within the scope of public health intelligence, using the specification of the Health and Care Intelligence Specialist Apprenticeship as a starting point. Other relevant curricula and training schemes should also be considered. This will help bring more clarity and coherence to professional roles and standards, promote mobility between organisations, and serve as a guide to understanding the training and development needs of public health intelligence staff.

5. The need for analytical leadership

At all levels of government and the NHS, efforts to develop health-related ICT systems and innovative uses of data have focussed mainly on improving medical treatment and the efficiency of healthcare. Even the 2021 government policy [Data saves lives: reshaping health and social care with data](17) concentrated on the importance of making better use of NHS data for clinical care and research but did not look in a meaningful way at the wider issues of using data to improve the public's health.

This absence of strategic focus mirrors a lack of clear responsibility for wider actions to improve everyone's health, and in many cases a lack of knowledge and vision among senior leaders nationally and locally about the potential of public health intelligence to transform our approaches to improving health and preventing disease. There is an urgent need for direction at national and local levels, without which scarce resources may be wasted on lower-value ventures and opportunities to benefit from new technologies will be missed.

At national level, there is no central team or 'Head of Profession' providing leadership for public health intelligence, promoting a clear professional identity and setting standards. The person or team with this role needs to have the authority of a government department while working closely with partners across the health and care sector, local government and beyond. This function was performed mainly by Public Health England (PHE) and subsequently the Office for Health Improvement and Disparities (OHID) within DHSC; however, PHE no longer exists and OHID lacks focussed senior leadership for the public health intelligence function within DHSC. As a result, public health intelligence lacks a prominent voice in national policy and planning either in England or in the UK as a whole. The focus on DHSC and its arms-length bodies at national level also over-emphasises the centrality of the NHS and healthcare within public health at the expense of the essential role of MHCLG, local government and their wider responsibilities for the welfare of communities.

At local level, there is an increasing need for leadership across health and social care systems capable of grappling with the complexity of public health challenges and understanding the application of data and analysis to those problems. The limitations of data use by senior

leadership in health and care organisations were pointed out in the 2016 Health Foundation study [Understanding analytical capability in health care](#)[18] which observed, for example, that boards and senior managers tend to focus on a few high-level organisational, financial and health indicators ('Key Performance Indicators' or KPIs) to drive decision-making, but these provide little in-depth insight or opportunity to understand underlying problems and their solutions.

Analytical leadership requires not only the leadership of analysis, but more importantly a form of leadership which is itself analytical

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Health, social care and public health services face long-term challenges such as the virtual stalling of health improvement and increasing inequality in the last decade[19]; increasing recognition of the need to address the wider socioeconomic, environmental, digital and commercial determinants of health[20]; and the complexities of multiple chronic illness in an ageing population[21]. Dealing with these successfully requires thinking and analysis with a high level of sophistication and rigour, taking into account entire care systems, national policies and local ecologies. It requires advocating the need to access and link multiple datasets within and beyond the health sector. This makes the question of analytical leadership timely and vital.

Analytical leadership requires not only the leadership of analysis, but more importantly a form of leadership which is itself analytical. Recent moves by some health sector organisations to appoint Chief Data Officers or Chief Analytics Officers[22] may be helpful but are not enough in themselves. There is a need for visionary and inclusive leadership across regions and local areas which goes beyond a managerial focus, bringing to bear understanding of the wider determinants of health, the complex cross-sectoral functioning of health and care ecologies, and the use and potential of sophisticated analysis and systems science to make informed decisions about policies and services. This changing focus can be seen as moving from a 'problem' focused public health intelligence capacity and capability, to a 'solutions' focused one.

As part of this development there needs to be strong local leadership for developing public health intelligence skills, bringing together diverse data resources, managing complex information governance and ethical issues, and demonstrating the practical value of data-driven interventions. All the necessary skills and resources are unlikely to be found within a single organisation, so close collaboration between sectors and barrier-free joint working is essential.

There is a strong case for senior public health specialists and public health intelligence specialists to take on an analytical leadership role in many organisations to shape the culture of how data is used to improve health. Public Health Consultants who have completed specialist training are already trained in core statistical and epidemiological skills, communication, advocacy and systems leadership; many have additional knowledge of NHS and social care data, wider local authority data, experience of quantitative research, roles as subject matter experts in data and analytical developments, and other relevant qualifications.

To increase the role and value of public health intelligence through stronger national and local leadership, fostering cross-sectoral collaboration to build highly skilled teams with the ability to support evidence-led public health policy and practice, we recommend:

Recommendation 4

DHSC should lead the process to appoint a senior leader, supported by adequate resources, to lead and represent the public health intelligence function both within the Department and across the health and social care sector and local government. They should provide forward-looking leadership for innovation in public health intelligence roles,

functions and methods; ensure the implementation of a coherent set of qualifications and standards; and promote and develop the public health intelligence profession. This will help remedy the current leadership gap and encourage a more purposeful and joined-up approach to the public health intelligence function.

Recommendation 5

The FPH and UKPHR should ensure, through the public health training curriculum, continuing professional development (CPD) and accreditation processes, that all public health specialists have up-to-date knowledge of public health intelligence and the skills to provide effective formalised analytical leadership across national, regional and local health and social care systems, including Integrated Care Boards in England. This will strengthen the ability of existing and future public health specialists to play a leading role in managing and promoting intelligence functions, using and communicating analytical findings, and providing analytical leadership in their organisations. The skills of public health specialists should include systems science (as illustrated by, for example, the specification of the Systems Thinking Practitioner Apprenticeship) and key areas of current importance such as understanding of the role of AI.

Recommendation 6

The FPH should work with DHSC, ADPH, Association of Professional Healthcare Analysts (AphA), Local Area Research and Intelligence Association (LARIA) and other organisations to promote a vision of analytical leadership which encompasses the whole of local government, NHS and allied services; aligns with the aims and values of public health; and recognises systems complexity. This could be done through (for example) Faculty or joint seminars and publications aimed at senior leaders, and will build a shared understanding of the value of advanced analytical methods and evidence-based public health policy.

6. Accessing data for everyone's health

The use and sharing of health-related data has a long history of regulation, which is necessary to protect the privacy of patients and other individuals, but can reasonably be argued to have become unnecessarily cumbersome and restrictive. The legal routes[23] available to access and link health data under the National Health Service Act 2006[24] are designed mainly for data uses such as clinical research and audit, and have a narrow scope focussing only on NHS patient records. Government and NHS organisations have established their own overlapping and often inefficient data access and sharing regimes which are rarely supportive of wider data uses for public health.

Clear understanding and consensus on the important ethical issues around data sharing and linkage is also essential, particularly to ensure that individual privacy and the public good are balanced in a transparent and equitable way. The public reasonably expect high standards of confidentiality from health professionals, while also generally supporting the use of anonymised health data for research and public health purposes[25].

> *Government and NHS organisations have established their own overlapping and often inefficient data access and sharing regimes which are rarely supportive of wider data uses for public health*

While the domain of 'health service' data is highly regulated, there is no coherent legal or organisational framework for bringing together the much broader range of data needed to

understand the drivers of health in the population, or even the variety of influences affecting the health of individuals over their lifetime. Local authorities who have responsibility for public health often lack some or all the prerequisites – such as expertise in data linkage and management, sophisticated IT tools, and access to data sources – that are needed to fulfil their remit.

This aim requires accurate data about people's health, but also precise and up-to-date information about all the risk factors related to protected characteristics and key inclusive health groups, and wider health determinants. Making that data available when and where it is needed is a key challenge facing national and local government and the NHS.

Compendia of indicators like the DHSC Fingertips tools and the Office for National Statistics Health Index (both for England only) provide an overview of many of the factors affecting health in each local area, but there is much greater potential to understand and improve health when we can bring together the huge variety of data sources now available, linking information at individual and geographical levels. All the many sources of data about our lives are potentially important for public health, for example:

- **Local authority records**, from education to housing, can help identify who is at risk from many different health problems
- **Information from voluntary organisations** can reveal insights relating to local communities, protected characteristics and inclusive health
- **Supermarket sales** can tell us about healthy or unhealthy eating patterns
- **Mobile phone signals** can tell us how people move around, throwing light on disease transmission and exposure to other risks
- **Wearables** like smart watches, smart rings and other sensors can provide real time data on activity, fitness and an increasing number of biometrics
- **Social media** can tell us about people's habits and current health concerns
- **Climate and pollution data**, modelled at local levels, can tell us about exposure to risks from excess heat, respiratory irritants, and carcinogenic chemicals

To achieve the greatest benefit, public health intelligence services need to integrate diverse data sources along with individual records of NHS treatment and social care. The necessary activities need sufficient funding and skills, particularly the use of advanced analytics which are solutions focused on complex systems thinking and there has been recent recognition of this in the National Institute of Health Research (NIHR) Health Determinants Research Collaborations (HDRCs) which aim to boost research capacity within local government[26]. But long-standing institutional blockers to accessing and linking health data are a major problem that still must be addressed[27][28].

There have been several strategies and reviews[29][30] over the years to improve the use of health data, of which probably the most thorough was the Sudlow Review published in November 2024[31]. The Sudlow Review rightly recognised the problems caused by fragmented control of health data, unclear legal provisions, and inefficient procedures for data access. However, the Review paid insufficient attention to the breadth of data needed for public health purposes, focussing mainly on NHS patient data and advocating isolating data in secure data environments (SDEs) – and approach which fragments data holdings, increases inefficient duplication, hinders cross-organisational working and makes seamless linkage of data more difficult.

A truly transformative public health intelligence service needs wide access to data about people and places, not restricted to NHS records or even health and care generally. This benefit cannot be achieved in the current position where data holdings are fragmented, organisational policies and practices about data sharing are inconsistent, and there is no clear legal basis for data linkage beyond the health sector. National solutions like a 'National Data Library' have been proposed[32][33] but such solutions also need to work for local health systems (particularly ICSs in England) where most health and care planning decisions are made[34].

A comprehensive set of new arrangements for data use for the public good needs to be supported by legislative change creating a clear and consistent, efficiently managed national data access regime which covers all institutions and types of data. Importantly, access to data for public health should be centrally mandated and not depend on locally varying data sharing decisions, inefficient per-project approvals, or the employment arrangements and locations of local practitioners. A new approach can also be informed by recognition of the ethical and public interest considerations around data sharing and linkage which were well documented by the Sudlow Review.

To make data available in a way that enables public health intelligence teams to better inform local government and the NHS and support the improvement of health through state-of-the art methods, we recommend that:

Recommendation 7

The relevant government departments including DHSC, MHCLG and ONS should urgently clarify the legal pathways and ethical framework for cross-sectoral data sharing and linkage, including ensuring the availability of healthcare microdata for public health, population health improvement and research purposes, by legislation if necessary. Existing institutional processes for data governance have been shown to be inefficient and harmful to public health and research, and they need to be reformed or replaced, possibly by a unified governance process. Access to data for public health should be centrally mandated and not depend on locally varying data sharing decisions, inefficient per-project approvals, or the employment arrangements and locations of local practitioners. A balanced consensus should be developed on the ethical issues including the case for greater use of data for the public good.

Recommendation 8

The relevant government departments, in consultation with experts on data sharing, privacy protection and data linkage methodologies, should urgently develop practical proposals to support cross-sectoral data linkage and effective use of cross-sectoral data through an appropriate technical architecture. This architecture must be designed and managed in a way that ensures integration and timely updating of the wide variety of data sources needed for public health intelligence and provide suitable access to authorised data users in both national and local settings.

Annex 1 – Timeline of public health knowledge and intelligence strategies and reports

1991	NHS Management Executive report on Purchasing Intelligence - first reference to the concept of an 'intelligence function' within health authorities.
1999	White Paper Saving Lives, Our Healthier Nation - led to creation of 12 regional Public Health Observatories (PHOs) and a number of themed observatories. PHOs subsequently transitioned into PHE Local Knowledge and Intelligence Teams (KITs) and then OHID Local Knowledge and Intelligence Service (LKIS).
2007	Publication of health information and intelligence strategy for England Informing Healthier Choices: Information and Intelligence for Healthy Populations as part of implementation of the 2004 White Paper Choosing Health: making healthier choices easier.
2009	National conference "The Future of Public Health Information and Intelligence: needs and applications" (Westminster Central Hall).
2012	Publication of Public Health Surveillance Strategy for England (Dept of Health) Local Public Health Intelligence Factsheets detailing local government requirements for public health intelligence capacity and services (and the steps that need to be taken to secure these) produced by Dept of Health and PHE Transition Team ahead of move of public health from NHS to local authorities.
2014	Launch of PHE Knowledge Strategy, Harnessing the power of information to improve the public's health - recognised PHE's leadership role for public health knowledge and information.
2015	National study of public health knowledge and intelligence workforce published by the Centre for Workforce Intelligence (CfWI)

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